

Virginia Cooperative Extension Service

COMMON WATER PLANTS OF VIRGINIA



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Common Water Plants of Virginia

by

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Extension Division



Virginia Polytechnic Institute and State University

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INTRODUCTION

Hundreds of species of rooted water plant and thousands of species of algae are found in Virginia's waters. These plants exhibit a great diversity of size, shape, structure, and habitat. This large number of aquatic plant species and their great variability of form, even within a single species, make identification difficult. Fortunately, only a few species cause most of the problems. This publication contains illustrations and descriptions which should help identify the most common water plants of Virginia. Additional helpful references on aquatic plant identification are listed at the end of this publication.

Louis A. Helfrich
Extension Specialist, Fisheries

TYPES OF AQUATIC PLANT

Aquatic plants can be divided into two major groups: (1) algae and, (2) rooted water plants. Algae are primitive, simple plants which lack true roots, leaves, or flowers and reproduce by spores, cell division, and fragmentation. They range in form from unicellular (single cells), through colonial and filamentous types, to advanced forms (muskgrasses) which superficially resemble the higher aquatic plants. Some are microscopic, and their presence is apparent only by the color of the water, while others can be readily seen with the naked eye. Algae are found throughout the lake or pond. They may appear as freely-floating surface scums or surface films attached to submerged objects, others can be found suspended in the water column (often giving the water a pea-green color), while still others are bottom dwelling forms which are often confused with higher aquatic plants. In contrast, the rooted aquatic plants are distinguished from the algae by the presence of true leaves, stems, roots, and flowers. They reproduce by means of seeds or fragmentation or by both of these methods. Rooted aquatic plants can be found floating at the water surface, submerged under the water surface, or emergent above the water surface.

Algae and the rooted aquatic plants can each be conveniently divided into three major categories on the basis of their ecological growth forms. Because the growth forms influence the methods that can be used for control, they provide a very useful basis for classifying aquatic plants. These growth forms are:

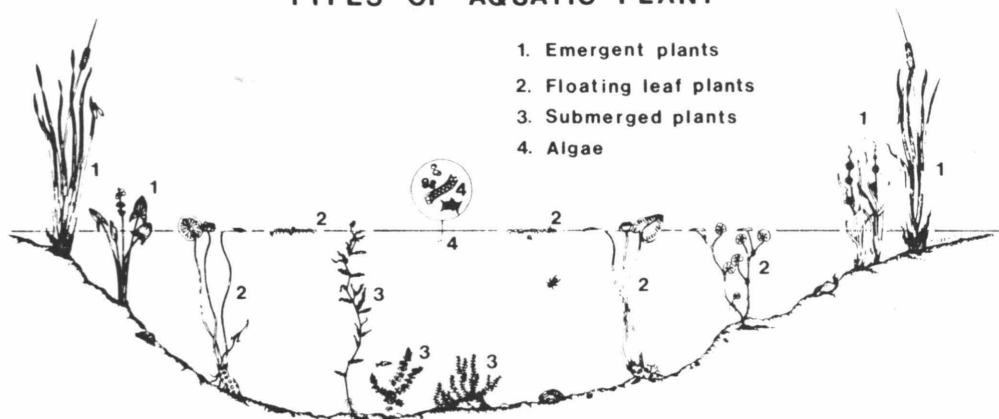
Algae

1. Plankton Algae
2. Filamentous Algae
3. Advanced Algae

Rooted Plants

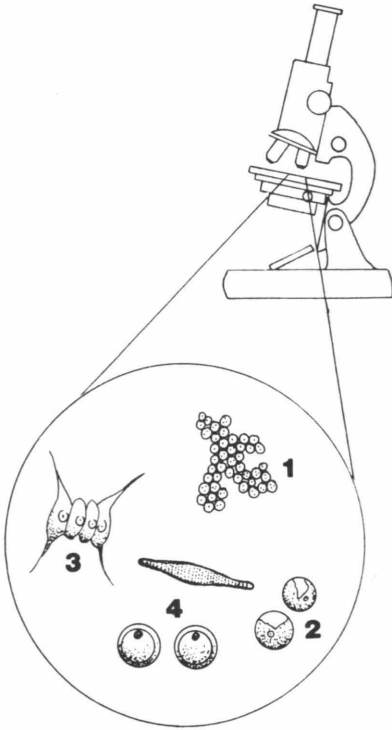
1. Emergent plants
2. Floating leaf plants
3. Submergent plants

TYPES OF AQUATIC PLANT



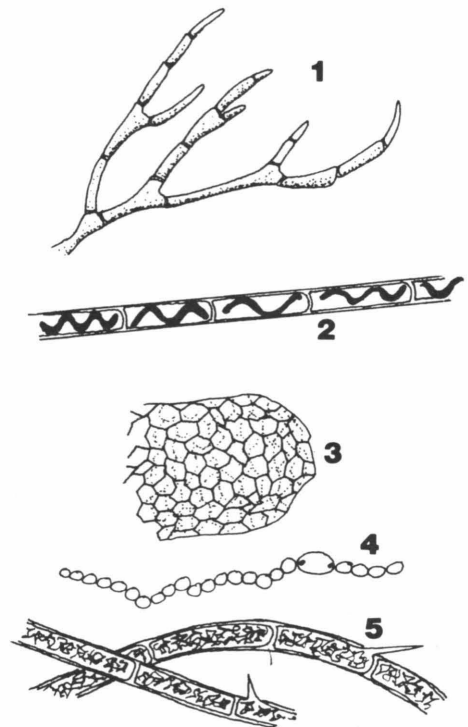
PLANKTON ALGAE

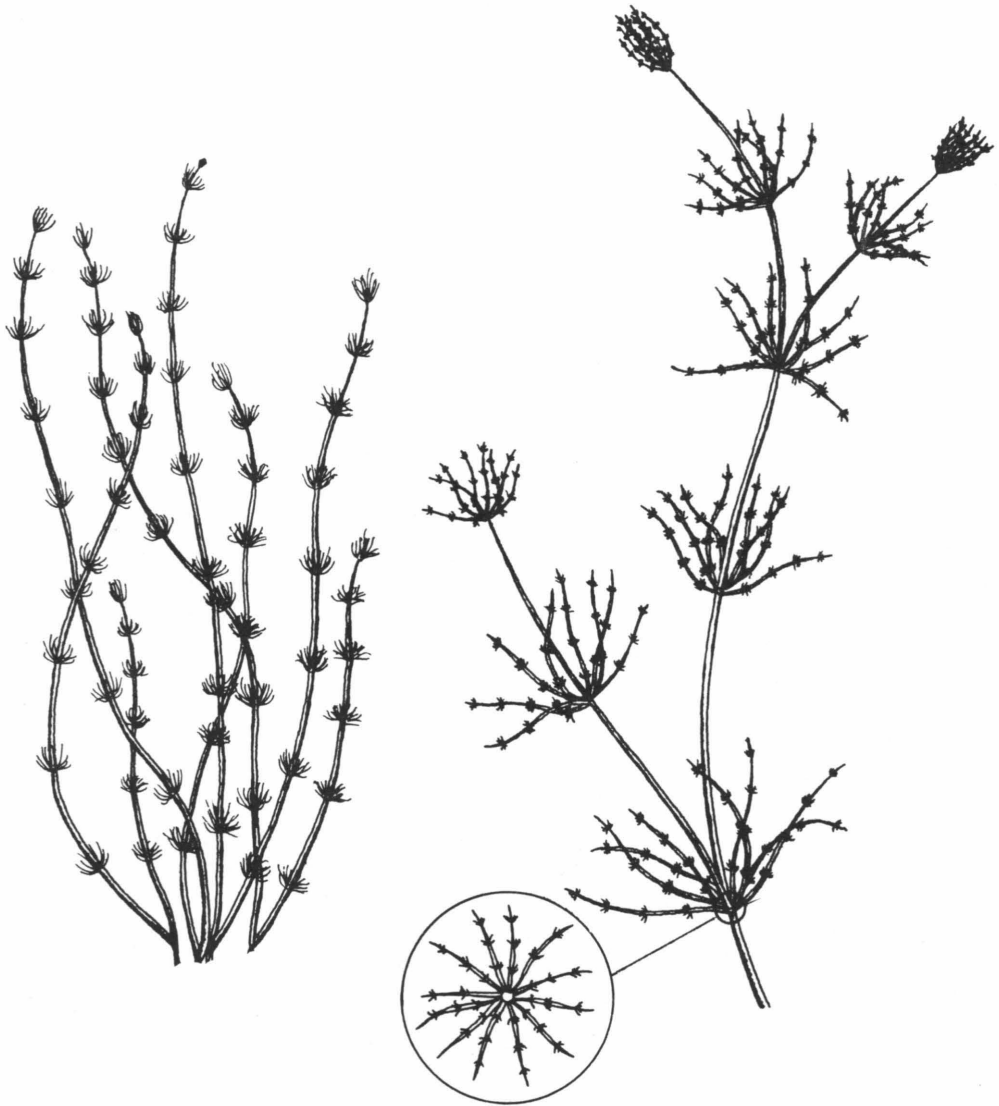
Plankton algae (Phytoplankton) are microscopic, single-celled, or colonial plants found freely drifting or suspended in open water. An unusually large number (greater than 500 plant cells per milliliter of water) is often referred to as a *water bloom*. These extensive accumulations, or blooms, of unattached algae found floating at or near the surface of a pond or lake often color the water blue, green, brown, yellow, or red, depending on the species. In large numbers, they are a common cause of taste, odor, and fish kill complaints, but these important plants also serve as the base of the food chain which supports all other aquatic life. Typical examples of planktonic algae include (1) *Microcystis* (blue-green), (2) *Chlorella* (green), (3) *Scenedesmus* (green) and (4) *Cyclotella* (yellow-green).



FILAMENTOUS ALGAE

Filamentous algae are composed of many cells united end-to-end which resemble thin threads or fine, hair-like strands that can be seen without a microscope. These are the most common algae nuisances in ponds and lakes. Large clumps of filamentous algae form surface mats, often called pond scum, which interfere with swimming, boating, fishing, and other recreational activities. Common examples of filamentous algae include (1) *Cladophora*, (2) *Spirogyra*, (3) *Hydrodictyon*, (4) *Anabaena* and, (5) *Rhizoclonium*.



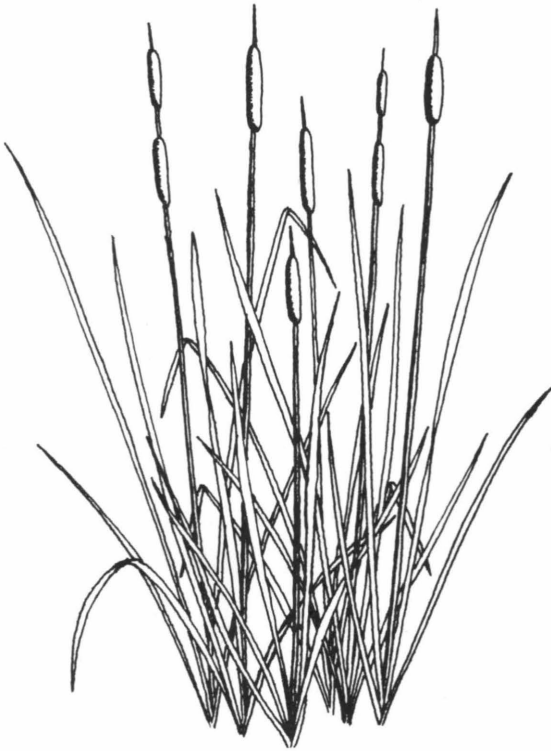


ADVANCED ALGAE

Advanced algae (muskgrasses) are bottom-dwelling plants which closely resemble the higher aquatic (vascular) plants. They have an erect stem-like column of tissue with whorled branches and forked leaf-like parts. They are usually brittle and rough to the touch, and have a strong musky odor when crushed. The cells of muskgrasses are all very similar, and this characteristic combined with the type of reproduction (without flowers and seeds) causes these plants to be classified as algae. They may completely cover a pond bottom growing up to 3 feet tall, particularly in areas rich in Limestone soils. Common examples of muskgrasses are *Chara* and *Nitella*.

EMERGENT PLANTS

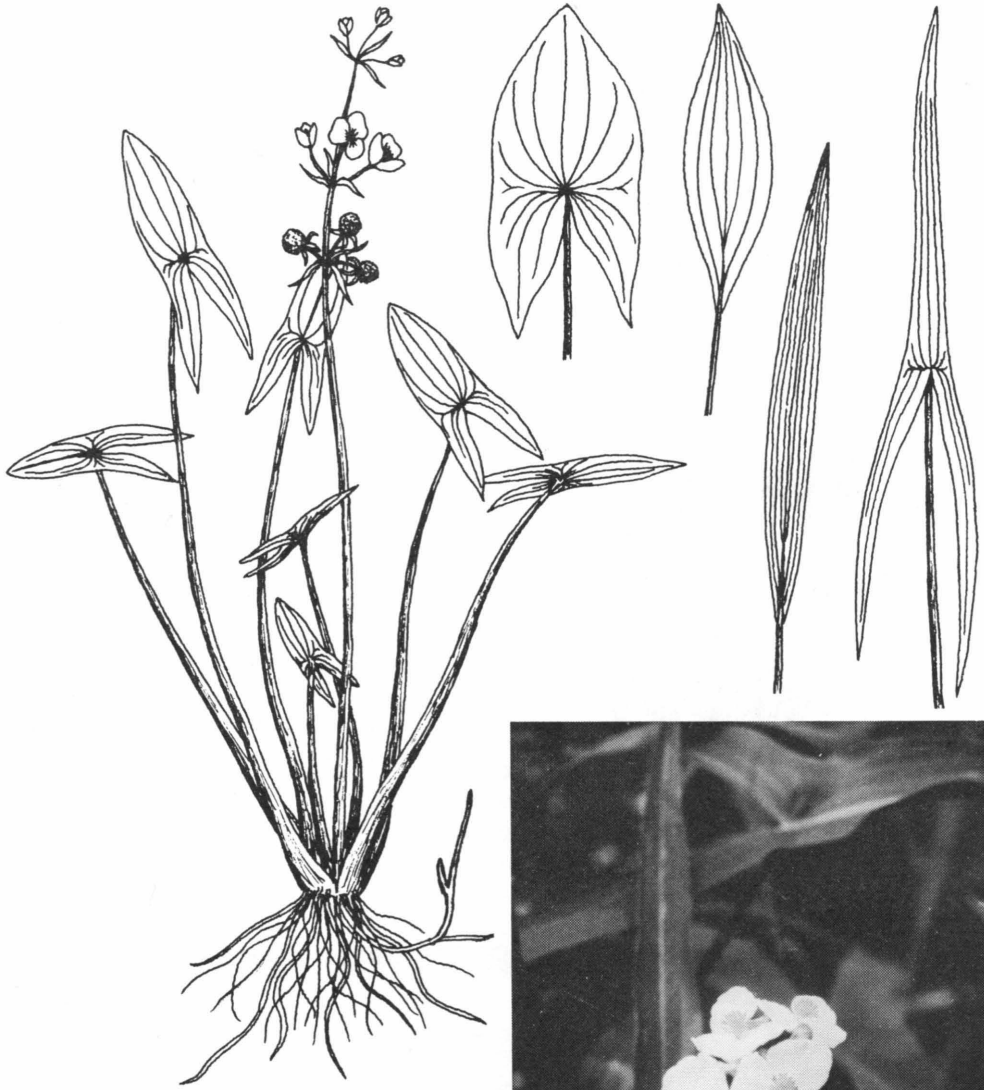
Emergents are aquatic plants that grow above the water surface in shallow shoreline areas of lakes and ponds. Emergent plants are rooted to the bottom sediments, but the major portion of the plant, including the stem, leaves, and flowers emerge above the water surface. Some of these plants are not truly aquatic but can survive in moist soils or even completely submerged for a considerable period. Most plants in this group have spear-like, grass-like, or arrow-shaped leaves. Some of these plants produce an underwater leaf which differs in shape from the aerial leaves. This variation in leaf form, termed heterophylly, is dependent on water depth and may make identification of certain emergents difficult. Although emergents normally grow in shallow waters, they can be found to depths of 12 feet in clear waters. Emergents are sometimes called marsh plants. Because emergent weeds often compete with submerged weeds, the removal of emergent weeds may allow submerged weeds to become established. This type of replacement is not desirable since emergent weeds are easier to control and produce fewer problems than submerged weeds. Some common emergents found in Virginia's water include cattail, arrowhead, pickerelweed, bulrush, rushes, burreed, and smartweed.



CATTAIL (*Typha* spp.)

Tall, erect marsh plants reaching ten feet in height. Long, grass-like stalk with ribbon-like leaves tapered at tip. Flowers occur in dense spike above leaves. Brown, six-to-ten-inch spike with male flowers above and female flowers below. Spikes persist into late winter and are sometimes gathered for decorations. Thick, edible rootstocks are rich in starch.





ARROWHEAD (*Sagittaria* spp.)

Leaves usually arrow-shaped, but may vary to ribbon-like underwater or near base. White, three-petaled flowers mostly in whorls of three on fruiting stalk. Reproduction by rootstock and seeds. Commonly called duck potato. Edible tubers on rootstock are rich in starch and provided an important source of food for Indian tribes.





PICKERELWEED (*Pontederia cordata*)
Large, heart-shaped leaves with parallel veins
often confused with arrowhead. Tiny violet-
blue flowers borne in dense spike at tip of stout
stalk.





RUSHES (*Juncus* spp.)

Grass-like marsh plants with round stems reaching four feet tall. May form large clumps with hundreds of stems. Leaves flattened, hollow, sheathed at base. Small green-brown flowers arise near stem tip, resemble those of a lily. About 200 species found in North America. Shoreline plants found in shallow water. The most common rush found in Virginia is the bullrush (*scirpus americanus*) which has a triangular-shaped stem, two to three feet tall. Clumps of stems may form dense stands. Small, brownish flowers and seeds in spikelet near tip of stem. Ribbon-like leaves with closed sheath at stem base.

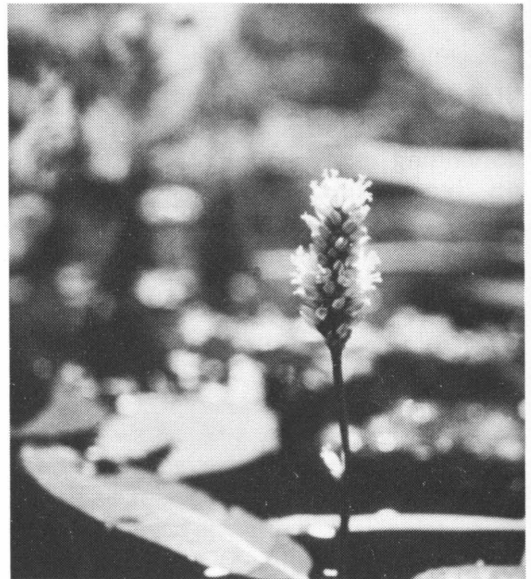


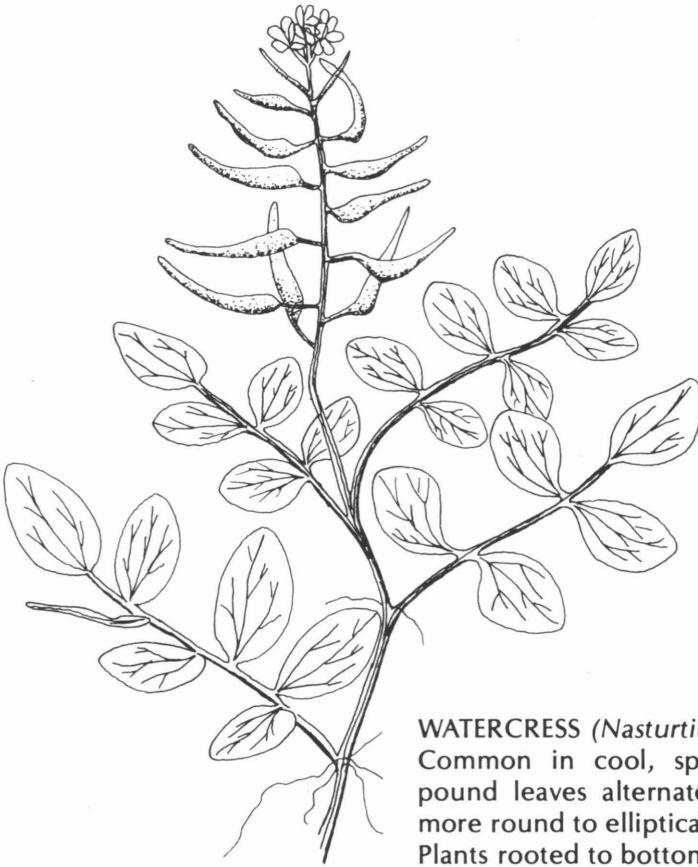
BUR REED (*Sparganium* spp.)
Fruiting heads form round, bur-like clusters containing many seeds. Male flowers at stem tip, female flowers below. Long ribbon-like leaves mostly basal, usually bluntly pointed, without prominent mid-rib. About 15 species in North America.





SMARTWEED (*Polygonium* spp.)
Oblong leaves alternate on stem and are fused to a stem sheath. Small, pink flowers clustered in terminal spikes. Plant growing emergent in shallow water or on most shorelines.

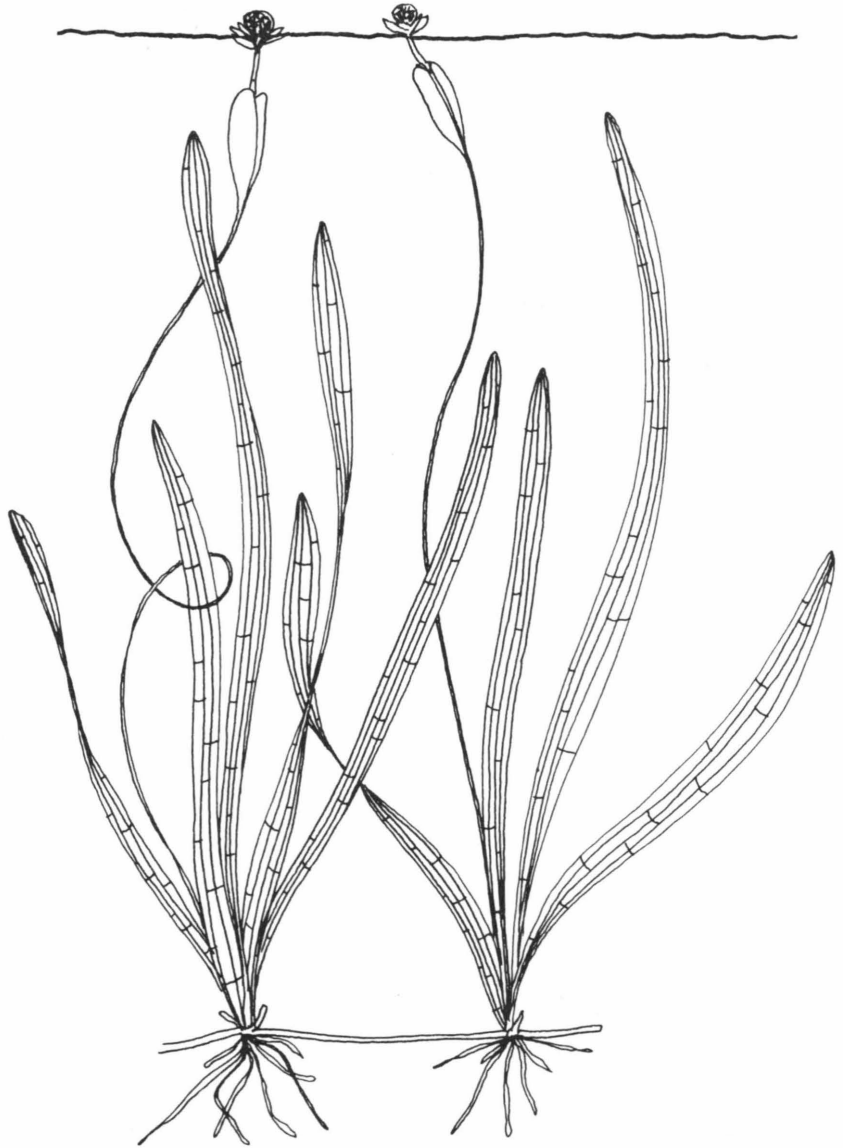




WATERCRESS (*Nasturtium officinalis*)

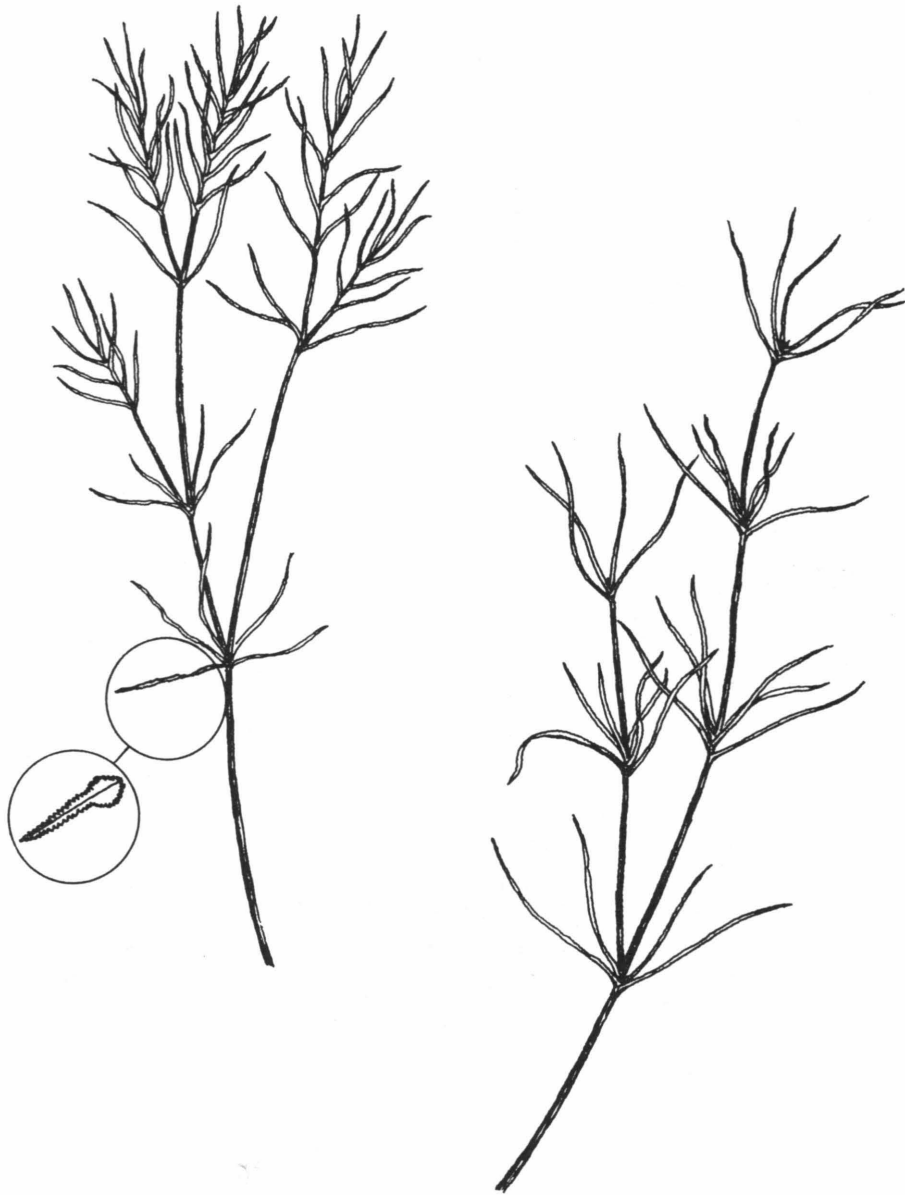
Common in cool, spring-fed waters. Compound leaves alternate on the stem. Five or more round to elliptical leaflets form each leaf. Plants rooted to bottom and form tangled mats in shallow water. Flowers are white, borne on slender stems. Dime-sized, green, glossy leaflets and stem tips are edible. Sprigs of watercress are sold commercially as a spicy addition to tossed salads.





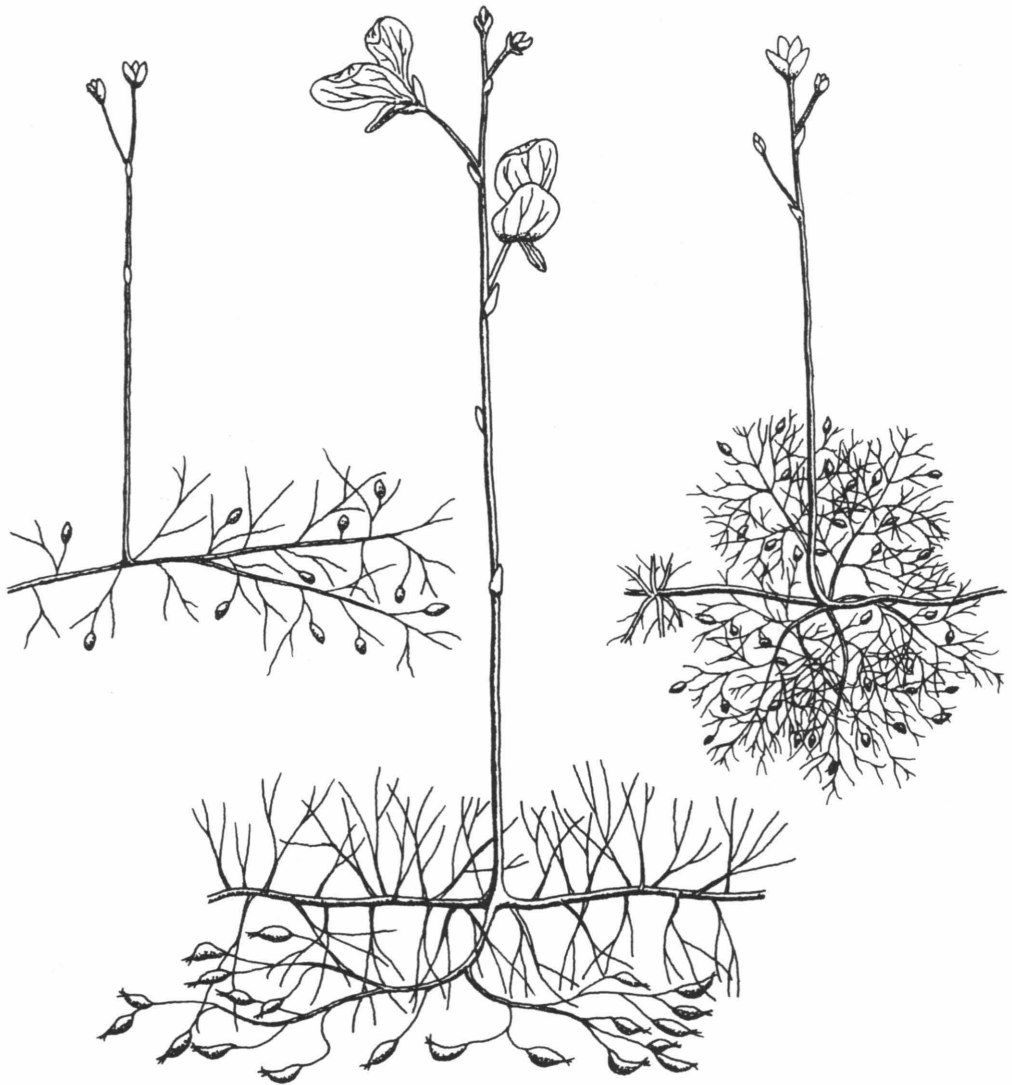
WILD CELERY (*Vallisneria americana*)

Also known as eel grass. Long, ribbon-like leaves may grow over 4 feet in length with upper part floating on the water surface. Plants rooted, with clusters of leaves growing from a creeping rootstock. Individual female flowers borne on a long, coiled stem floating on the surface. Small yellowish flower visible in late summer. Submerged male flowers grow from a short stem at base of plant. When mature, they break loose and float to the surface. A valuable source of food for waterfowl, it is often planted in wildlife refuges.



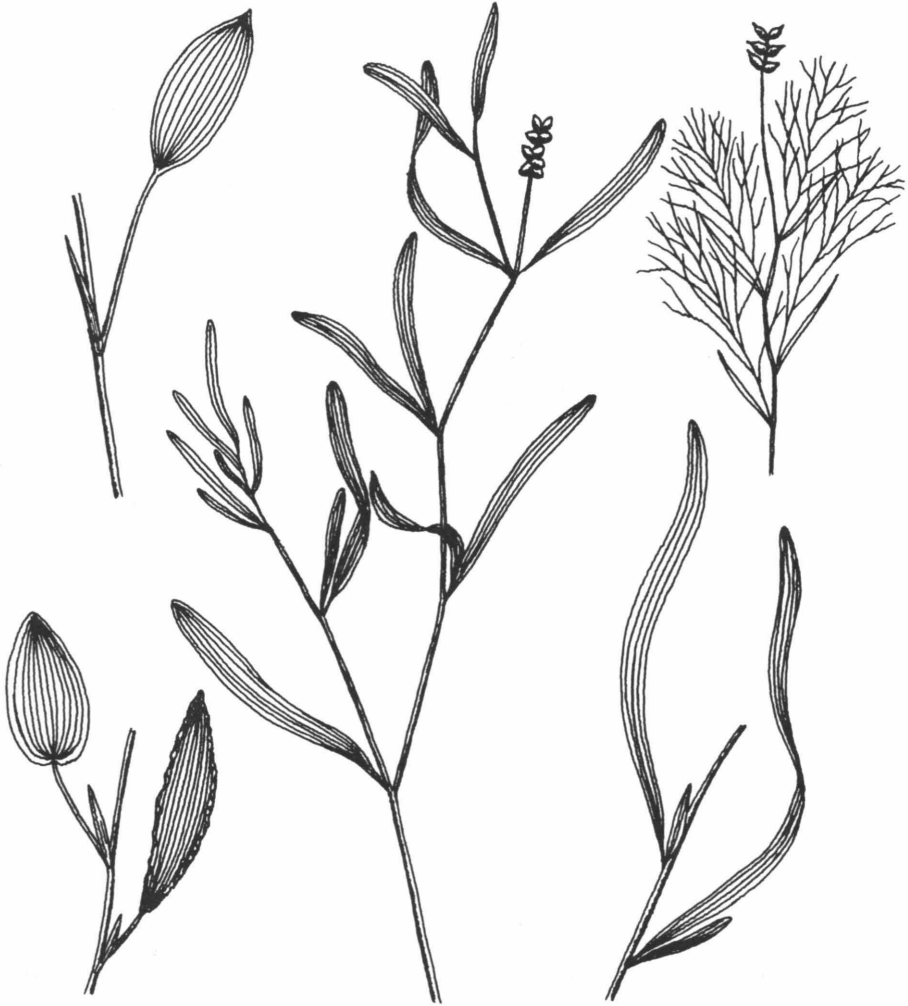
NAIAD (*Najas* spp.)

Plants with narrow leaves arranged opposite or whorled on a slender stem. The linear leaves are wide and sheathed at the base and narrow at the tip with either coarse or fine teeth at the edges. Do not confuse with coontail which has teeth along one leaf edge only. Inconspicuous flowers and seeds produced in leaf axils. About eight species are found in the United States.



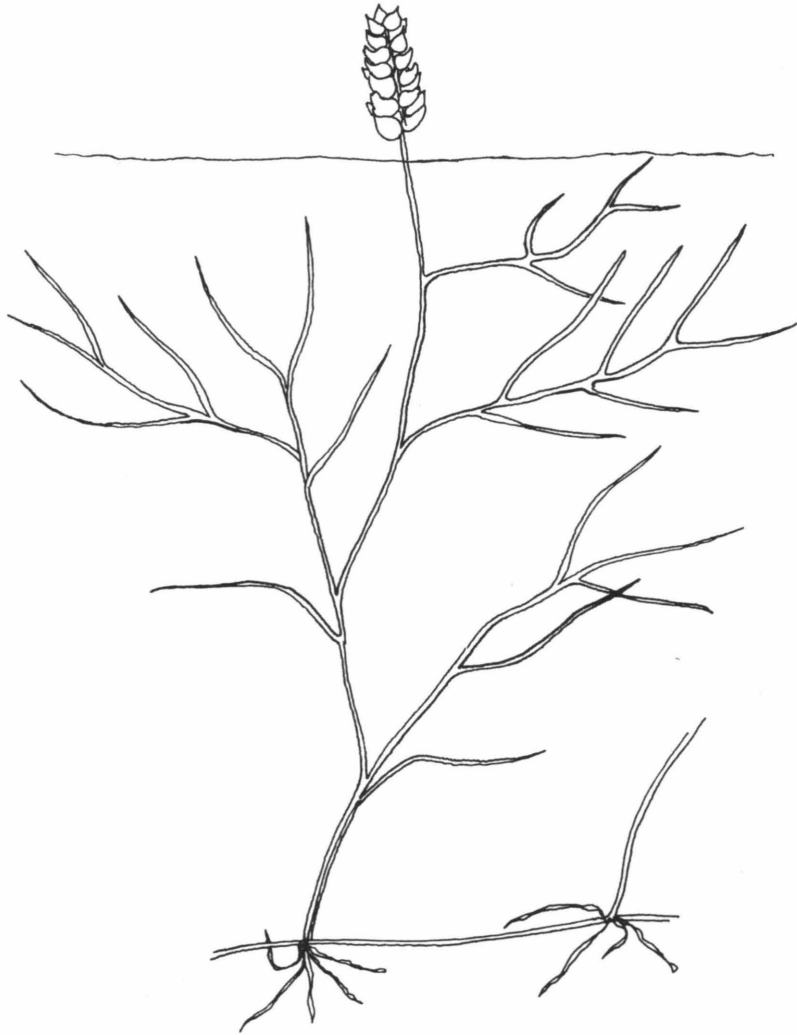
BLADDERWORT (*Utricularia* spp.)

Submersed or floating, rootless plants with finely divided leaves arranged alternately on the stems. In most species, small bladder-like sacs are scattered throughout the leaf segments. These tiny bladders provide bouyance and act as traps to capture microscopic aquatic life which serve as nourishment for these insectivorous plants. Flowers emerge above the water surface and may be yellow, white, or blue depending on the species. About 12 different species are found in the United States.



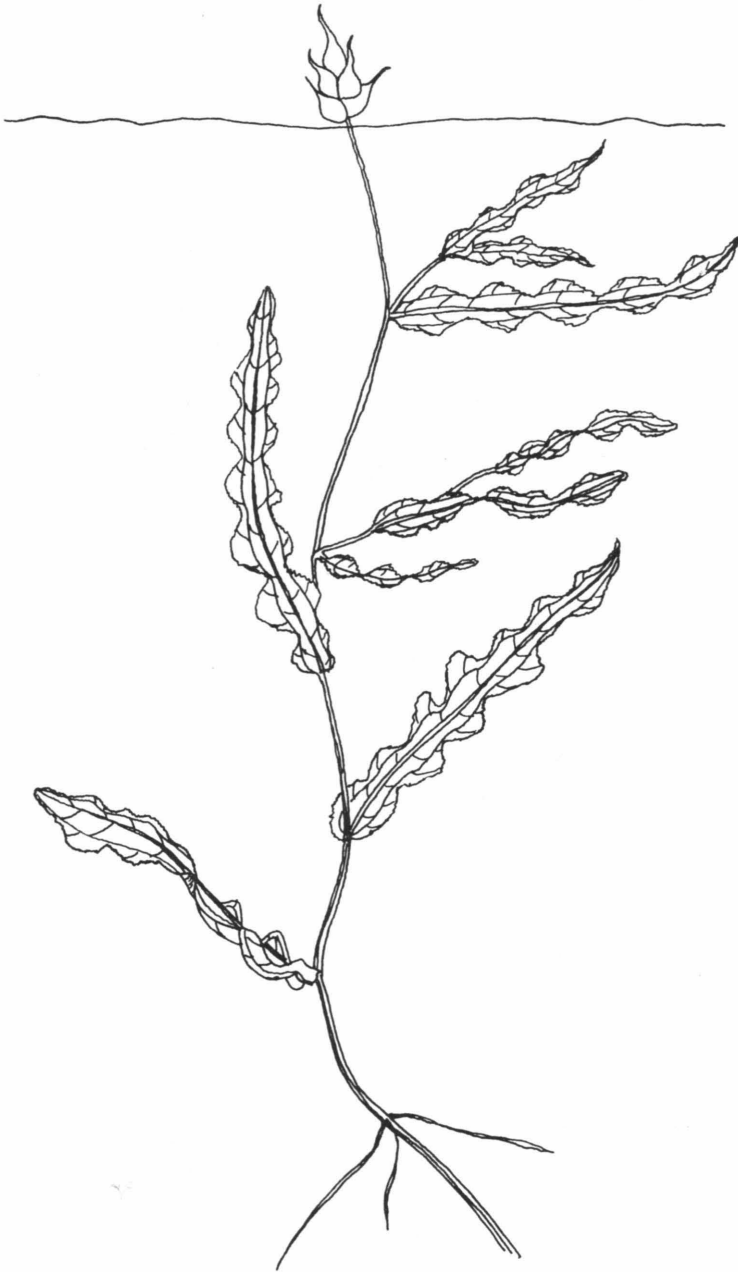
POND WEEDS (*Potamogeton* spp.)

This is the largest and most abundant group of aquatic seed plants. Over 50 different species of pond weed are found throughout the United States. Members of this group are very common in lakes and ponds, but they are highly variable in appearance and difficult to identify. An unknown plant which is rooted to the bottom and has leaves that are sheathed at the base and alternately arranged on a hollow stem is very likely to be a member of this group. Descriptions of a few of the more common pondweed species follow.



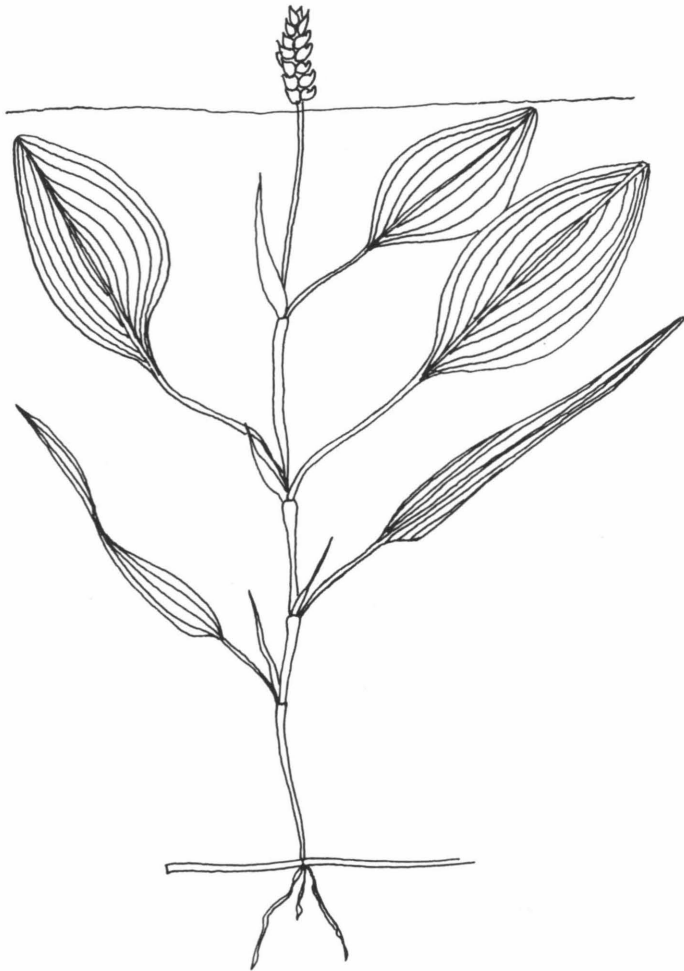
SAGO PONDWEED (*Potamogeton pectinatus*)

Plants with very fine, thread-like leaves arranged alternately on the stem. Small flowers and seeds clustered on a terminal spike emerging above the water surface. Common in ponds, lakes, and non-acidic waters. This species produces edible tubers and seeds preferred by waterfowl.



CURLY PONDWEED (*Potamogeton crispus*)

Plants with broad, elongate leaves that appear wrinkled or wavy, with fine teeth along the edges. Leaves alternate and are sheathed at the base, with distinct veins and midrib. Flowers and fruits produced in a terminal spike above the surface. Abundant in fertile waters and may indicate pollution.

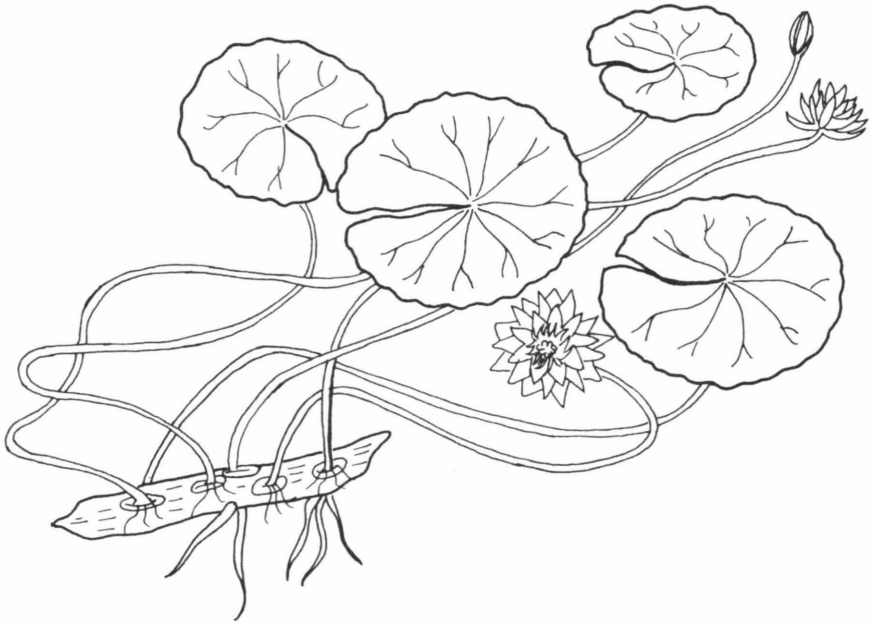


AMERICAN PONDWEED (*Potamogeton nodosus*)

Floating leaves are oval to elongate and tapered at the base to a long leaf stalk which is distinctly sheathed at the stem. Underwater leaves are long, narrow and grass-like. All leaves are arranged alternately on the stem. Flowers and seeds borne in a terminal spike above the water surface. Similar in appearance to *Potamogeton illinoensis* and *Potamogeton natans*.

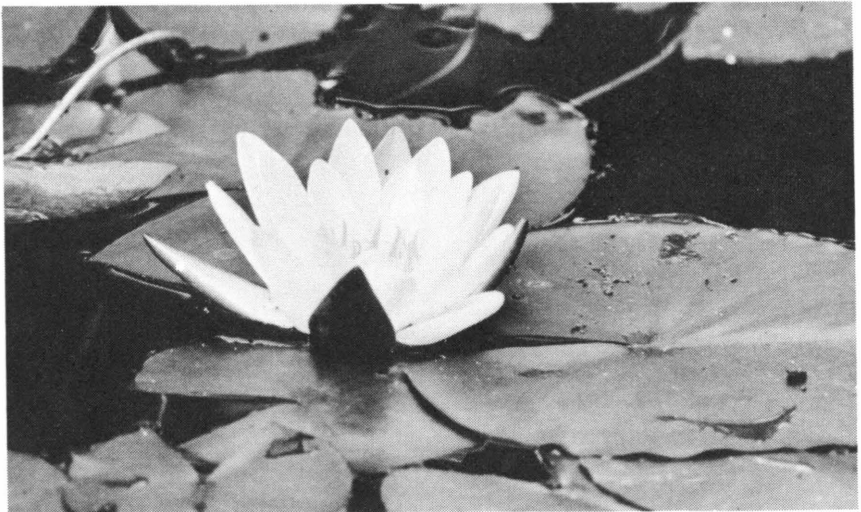
FLOATING-LEAF PLANTS

Plants with leaves that float on the water surface are included in this category. Floating plants include those that are rooted to the bottom muds as well as those that are unattached and float freely on the water surface. Freely floating plants have true roots that dangle in the water and collect dissolved nutrients through their suspended root system. Bouyancy is provided by the structure of waxy leaves. Water is necessary to support these plants. Some freely floating species are very small and often confused with algae. Water meal, the smallest of the flowering aquatic plants, has a single oval shaped leaf which is less than one-sixteenth of an inch in diameter. Under favorable conditions, these small free-floaters are capable of rapid reproduction and may form a green blanket covering the water surface. Wind and water currents often concentrate these drifting plants, forming a thick surface layer in protected areas. Common examples of attached floaters include the white waterlily, yellow waterlily, watershield, and water pennywort; common types of unattached floaters include duckweed and water meal.



WHITE WATERLILY (*Nymphaea odorata*)

Large, round leaves with a single deep notch. Stem attached at the base of the notch in the center of the leaf. Leaf veins radiate from the center of the leaf. Large, white, fragrant flower with many petals arranged in rows. Flowers open during the daylight hours; closed at dawn, dusk, and during the night. Sometimes sold commercially and introduced in ponds and lakes as an ornamental plant.

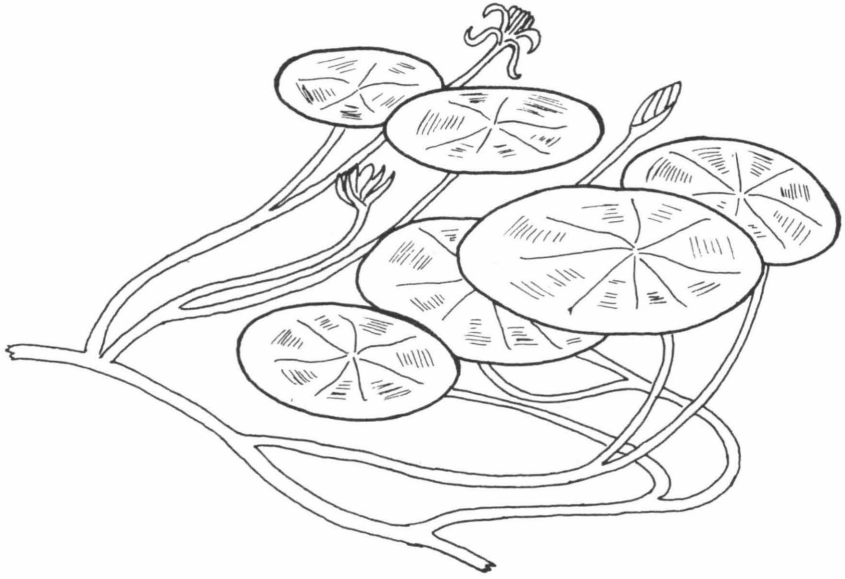




YELLOW WATERLILY (*Nuphar* spp.)

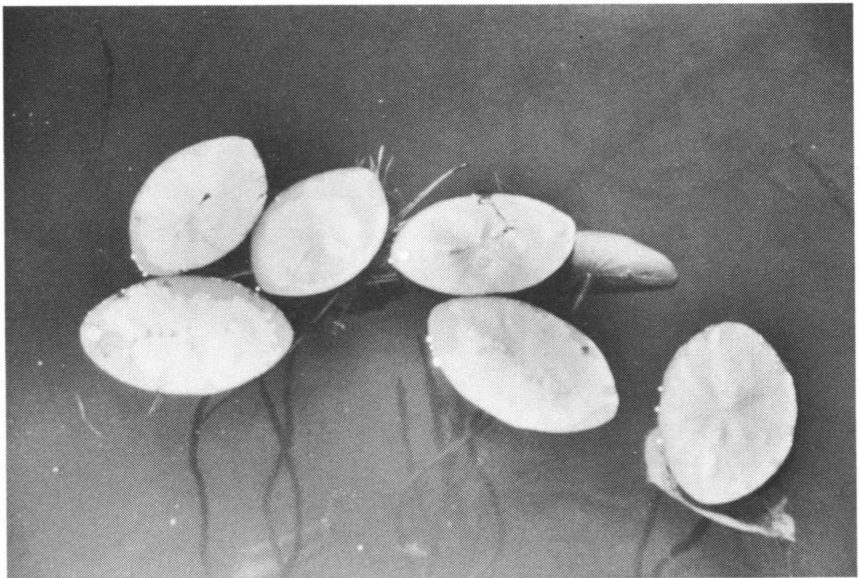
Also called spatterdock or yellow cowlily. Large, heart-shaped leaves with a distinct midrib. Leaf veins extend laterally from the midrib to the leaf edge. Floating leaves may extend above water surface. Round, yellow-green flower with inward-curving petals may bloom throughout the summer.

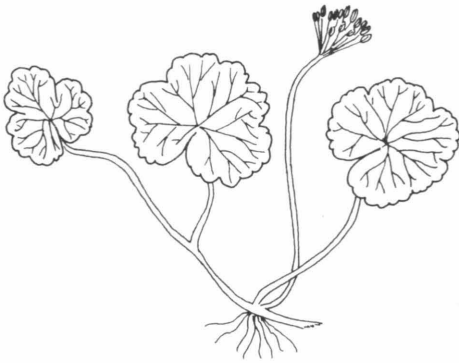




WATERSHIELD (*Brasenia schreberi*)

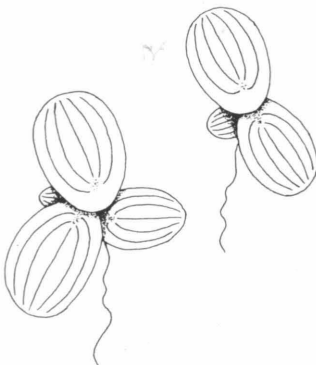
Small, oval to elliptical leaves less than 4 inches in diameter. Leaves are not split or notched. Leaves are slippery to the touch and purple-colored on the underside. Small, purple flowers with 3 or 4 petals. Most abundant in acid water.





WATER PENNYWORT (*Hydrocotyle* spp.)

Small, round, clover-like leaf with distinct lobes. Mature leaf less than 1 inch in diameter with veins radiating from the center. Leaf stem attached at center. Small white flowers clumped on an individual, naked stalk. Leaves may extend above the surface in shallow water. Typically rooted, but sometimes breaking loose to form floating mats.

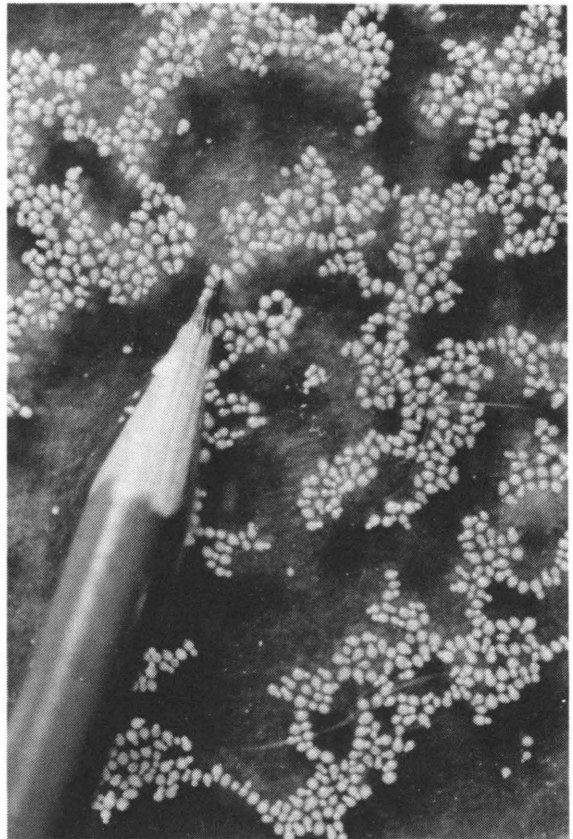
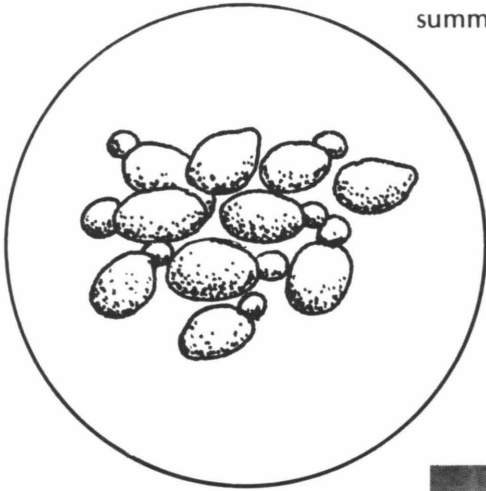


DUCKWEED (*Lemna minor*)

Tiny, freely-floating plants consisting of one to three flat, oval leaves (actually fronds) each less than one-fourth of an inch long with a single, dangling root. Flowers inconspicuous and rare. Reproduction by budding or cell division. Drifting plants often form a green blanket covering the surface of quiet waters in mid-summer. Star duckweed (*Lemna trisulca*) another common species, has narrow leaves up to one-half inch long, often connected to form zigzag chains.

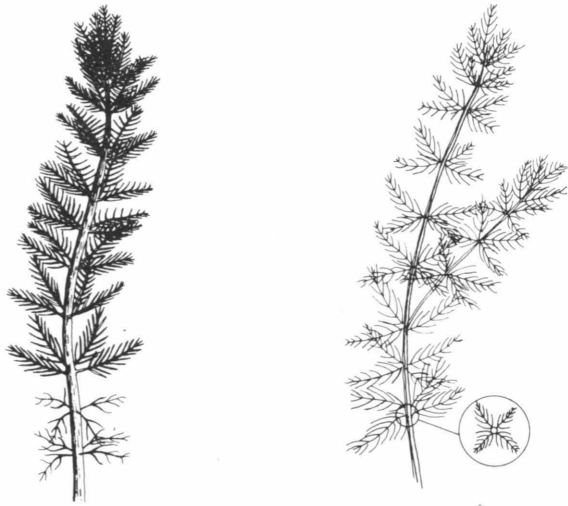
WATER MEAL (*Wolffia* spp.)

The smallest flowering and seed plant known. These tiny rootless plants resemble pinhead-sized green peas or grains floating on the surface and are commonly mistaken for seeds or algae. They may become very abundant and cover the surface of small ponds during the summer. Three species are found in Virginia.



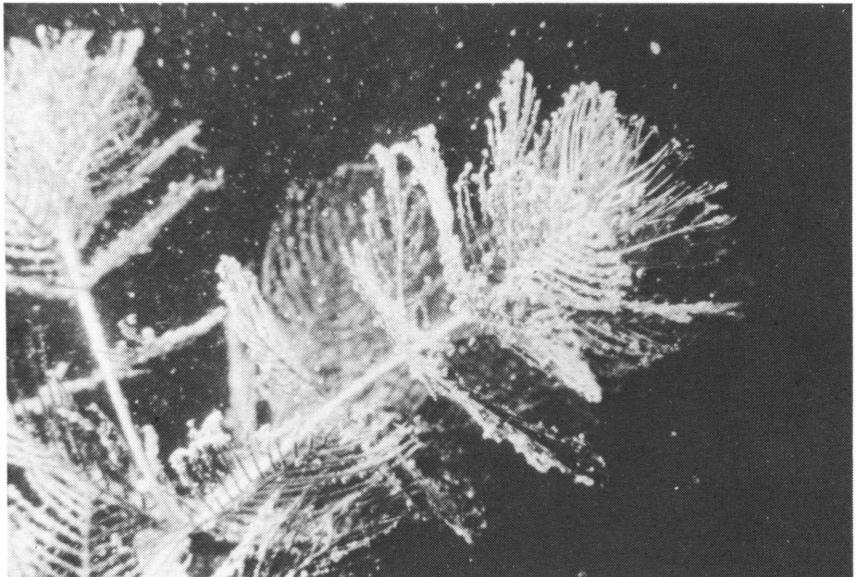
SUBMERGED PLANTS

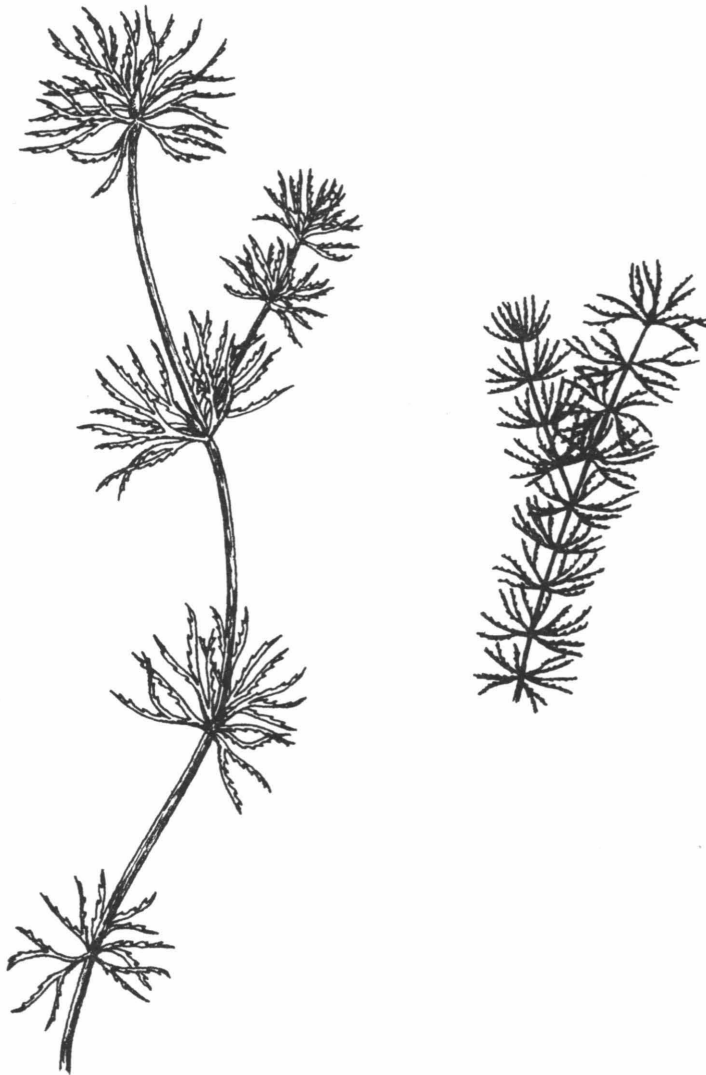
Submerged plants include those that normally grow beneath the water surface. Although the flowers and seed stalks may, at certain times, extend above the water surface to insure pollination by wind and insects, most of the plant remains submerged below the surface. These plants are usually, but not always, rooted in the bottom sediments. Some submerged plants have weak, delicate roots that are used to obtain nutrients rather than for anchorage. Submerged plants with fragile roots often break free from the bottom mud and can be found floating freely beneath or at the water surface. The abundance and growth of submerged plants depends primarily on water depth and clarity. Most submerged plants are limited to a depth of 12 feet or less in clear waters. Muddy or turbid waters further restrict the depth to which these plants can grow. Submerged plants are often called seaweeds, waterweeds, or bassweeds. Common plants in this group include water milfoil, coontail, elodea, watercress, wild celery, naiad, bladderwort and many different species of pond weed.



WATER MILFOIL (*Myriophyllum* spp.)

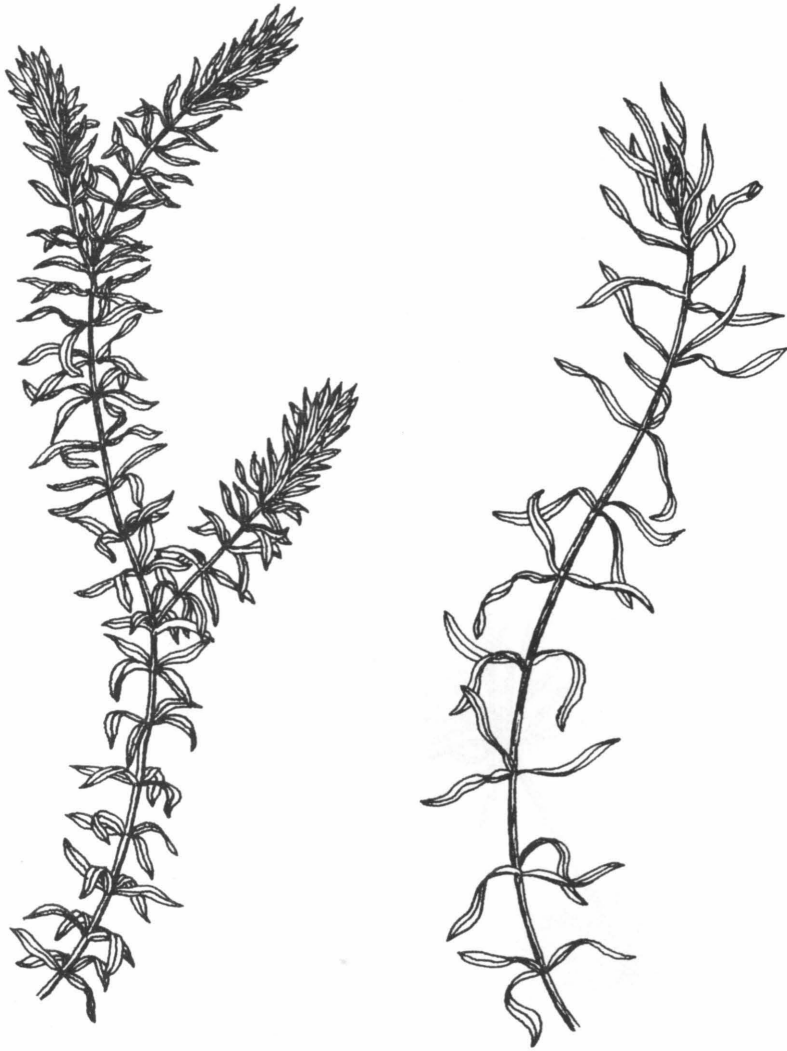
Commonly called “parrot’s feather”; grows up to 4 feet long. The feather-like leaves are finely divided to the midrib and whorled (usually in four’s) at even intervals on the hollow stem. Tiny, inconspicuous flowers, frequently surrounded by broad, undissected leaves, occur on terminal spikes above the water surface. Reproduction is by seeds and plant fragments. Many exotic species, particularly Eurasian Water Milfoil (*Myriophyllum spicatum*), are imported as aquarium plants and have become established nuisance weeds in this country. Do not confuse with coontail which has teeth along one leaf edge.





COONTAIL (*Ceratophyllum demersum*)

These plants without roots are often found floating beneath the surface, but may be anchored to the bottom by the lower part of the stem. The dark-green leaves, arranged in dense whorls on the stem, provide a bushy, coontail-like appearance. The forked leaflets have a distinctly toothed edge and are not feather-like as in water milfoil. In late summer, the tips of the branches thicken, forming winter buds which subsequently break off, sink to the bottom, and develop into new plants the following spring. Coontail is commonly called hornwort.



ELODEA (*Elodea canadensis*)

Small, simple leaves arranged in whorls around a slender stem. Leaf whorls are dense near the tip, but widely spaced further down the stem. Tiny, inconspicuous flowers extend to the surface on slender tubes. Plants usually rooted, but may break free, forming floating mats. Commonly sold as a popular aquarium plant. Also known as frogbit or anacharis.

Suggested references for aquatic plant identification:

A Manual of Aquatic Plants by Norman C. Fassett. 1972. The University of Wisconsin Press, Madison, Wisconsin. 405p.

Common Marsh, Underwater and Floating-leaved Plants of the United States and Canada by Niel Hotchkiss. 1967. Dover Publications, Inc., New York, New York. 124p.

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The New Field Book of Freshwater Life by E. B. Klots. 1966. G. P. Putnam's Sons, New York, New York. 398p.

Algae in Water Supplies by C. M. Palmer. 1962. Public Health Service Publication No. 657. Washington, D.C. 88p.

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